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ABSTRACT

This paper reflects upon the growing expectation for HCI research projects to collaborate closely with partners in industry and civil society. Specifically, we suggest that this type of engagement is often prefigured around the agendas, needs and capacity of diverse research partners, which researchers must then carefully negotiate. We explore this by describing a case of a recent large UK research project called *Creative Informatics*, where our research and co-design activities are heavily influenced by the UK's Industrial Strategy. As researchers just beginning to work on this project, we call attention to its initial challenges. By doing so, we invite future-oriented discussion about how existing and new research approaches - ranging from participatory design approaches to reflective frameworks - might evolve to meet the challenges of projects where industrial and social impact is equally important to research impact.

CCS CONCEPTS

• **Human-centered computing → HCI design and evaluation methods**.

KEYWORDS

Responsible Innovation, Creative Industries, Participatory Design, Data-Driven Innovation

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1 INTRODUCTION

Beyond undertaking research that is carefully 'situated' [18] or 'in the wild' [5], contemporary HCI research builds on participatory approaches that reflect diverse voices, needs and critiques of technology development [20], or even explicitly adopt activist stances [10]. In many cases, this desire to work with real people on real world problems, leads HCI researchers to collaborate closely with a great range of research partners in industry and civil society. Partners often provide a link or representation to a specific community, or access to specific technologies and related expertise. In a UK context at least, such collaborations are often explicitly required to secure significant funding from research councils, and it is expected that the knowledge generated by these partnerships will have impact beyond academia[1]. Perhaps most explicitly, in a UK context, research is increasingly funded as part of a broader economic Industrial Strategy[2].

A more industrial focus may ensure applied research that tackles society's 'grand challenges', but inevitably this also means that research is configured in new ways, to engage a wider range of stakeholders. This shift also presents an opportunity for the voices and political stances of HCI researchers to be more readily heard beyond academia. In this provocation, we briefly explore the future of research and design in HCI that must increasingly negotiate a three-point dilemma between producing high-quality research, ensuring meaningful participation with project partners, and delivering societal innovation and impact through industry engagement. To explore these challenges further, we will reflect on our emerging experience of a new research project where these varied demands

[1]https://re.ukri.org/knowledge-exchange/knowledge-exchange-framework
[2]https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges

come to the fore, and consider briefly how the suite of methods and approaches in HCI research are placed to meet the challenge.

2 THE *CREATIVE INFORMATICS* PROJECT

The *Creative Informatics* project is a large-scale, 4-year project in Edinburgh, UK, which has been funded by the Arts and Humanities Research Council and other regional deals with the aim of stimulating 'data-driven innovation' (DDI) [15], throughout the creative industries[3] across the region. In effect, the project poses the question: what is a creative industry in a data-driven society? However, what is notable about this project is the extent to which it is driven by both research and industrial goals.

2.1 From R&D Priorities to Minimum Viable Products

A priori, the project identified four initial 'R&D priorities' that DDI is envisaged to support in the context of the creative industries:

- Developing access to and engagement with new audiences and markets
- Developing new modalities of experience
- Unlocking the value of archives and data sets
- Exploring new business models for the creative industries

These priorities offer an initial scaffolding for the project, and hint at research agendas, as much as business strategies. In purely academic terms, our research aims are potentially much broader and open-ended than this, cutting across a number of disciplines, from design and HCI to digital humanities and innovation studies. Furthermore, the researchers on the project each bring their own research interests; these range from investigating the implications of new financial technologies in the creative economies, to building tools to enable creative practitioners to engage with datasets in new ways, for example to assess the sustainability of their work.

However, these priorities are only seen as a starting point. In a variety of ways our project seeks deep participatory engagement from the creative sector locally to pose their own questions and challenges. Getting this participation right is especially important, because in practice the project will primarily act as a quasi-funding council by administering, supporting and researching the award of hundreds of small grants to individuals and organisations working in the local creative and tech industries. Most strikingly, despite the outlining of R&D priorities, in many cases we expect creatives themselves to outline the 'challenges' that they hope might be addressed with data. In another scheme, we will offer numerous residency projects for creatives to work on their own 'data-driven projects'. Ultimately, the project's key deliverables are not simply academic research outputs, but also encouraging a whole sector of creative practitioners to leverage data and DDI in new ways in their work, and in collaboration with technology partners, to develop 'minimum viable products' that will lead to new data-driven businesses and sustainable growth in the creative industries.

[3]The creative industries have been defined by the UK government's Department for Digital, Culture, Media & Sport as "those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property." Specifically, these include: advertising, architecture, the art and antiques market, crafts, design, designer fashion, film and video, interactive leisure and software, music, the performing arts, publishing, software and computer services, television and radio [7]

As such, this is an exciting and potentially impactful project, and will allow us, as HCI researchers, to impart our voices and political stances to the broader agenda of DDI; yet at the same time, it presents profound challenges for how we organise and approach our research. We argue that as HCI research increasingly engages with - and in some cases is even led by - the Industrial Strategy, configuring this practice will be of increasing importance, and lies beyond even waves of epistemological and methodological debate [3].

2.2 Balancing Research, Participation and Innovation in Practice

In the remainder of the paper, we first introduce challenges we have encountered so far within our project, and reflect upon how approaches and frameworks in HCI may be required to change, in order to overcome the tensions arising from balancing research, multi-stakeholder participation, and impactful innovation.

2.2.1 What counts as Data-Driven Innovation? Within our project, a challenge emerges from the way in which DDI is defined and conceptualised. As an industrial strategy, DDI is explicitly concerned with stimulating economic growth through the gathering and application of data across all industries [6, 15]. Within HCI and academia more broadly, there are increasingly critical views about the implications of a data-driven society (e.g. [9, 11, 13, 16, 21]); these range, for example, from the need to ensure privacy and control over personal data [14], to the need to consider that data requires context and becomes situated 'in place' [19]. Yet again, creative practitioners with whom we will be working themselves have mostly never heard the phrase 'data-driven innovation' before, and when they do, it is more likely perceived on the very pragmatic terms of how recording, generating or processing data might contribute to their work or practice. Therefore, in our research, we are faced with the challenge of balancing this triad of perspectives, that is: supporting academic, applied research that contributes to new understandings of how people interact in a data-driven society; engaging with and supporting projects that leverage data to forge growth in the creative sector; and supporting creative practitioners in building and diversifying their skillsets in order to innovate on their terms, within their fields.

2.2.2 Whose research agendas are prioritised? As part of the project, our role as researchers includes steering the creative industries toward innovative R&D questions, rather than those aimed at just boosting their immediate efficiency and output. Questions that meet these goals may include, for example, addressing new modalities of experience within a specific sector (for example using AI in textile making, or creating Internet of Things technologies for festival audiences) or unlocking new value in existing datasets (for example, by using new digitisation methods to make analogue historical artefacts accessible to wider audiences).

Simultaneously, however, our research should be continually reflective of the real needs of creative industries. Although we need to stimulate new ideas and agendas for the creative industries, we must be careful of predetermining the projects of the creative partners. While we may have clear ideas of academically rich research directions, a participatory approach, and the aim to meet real-world

commercial needs means we require considerable work to liaise between envisioned technological opportunities, and the extent to which new technologies can solve real-world problems. In such a large and broad project, this raises questions of how our multiple research agendas can be satisfied, while fulfilling obligations to a diverse community with whom we hope to collaborate?

2.2.3 Supporting both inclusion and innovation. Genuine and diverse participation is central to our project. This is because we seek to understand the implications of DDI across a whole range of creative industries [8] rather than just those well placed to immediately benefit from it. Further, across the creative industries, there is considerable variance in the knowledge base as regards data and digital technologies. Evidently, organisations who have already made a data-driven turn (for example within the games industry, or advertising) are much more likely to be in a position to immediately engage with and propose innovative research agendas. In many respects, these organisations would make the most natural and exciting research partners who could deliver world-leading innovation; however, we would then potentially exclude other significant partners or industries who have had few opportunities or needs to engage with DDI so far. In short, how can we ensure both inclusivity, and at the same time stimulate genuine innovation in an ultimately technologically-driven project?

2.2.4 Critical and ethical boundaries to commercial aims? HCI research has frequently positioned itself critically and ethically in relation to the introduction of new technologies. Numerous scholars have recently revealed complex challenges of data-driven anything: most notably, 'surveillance capitalism' [21] and 'algorithmic inequality' [9]. In many cases, one might well argue that the economic premises of 'data-driven innovation' as outlined by the Organisation for Economic Co-operation and Development (OECD) and in subsequent industrial strategy reports [6, 15] promote business models that are in direct contest with these challenges, as well as perhaps our own University's ethical guidelines. We see part of our role in this project to help unpack these challenges in the context of the creative industries, and perhaps even to develop alternative modes of data-driven innovation than currently envisaged. Nonetheless, given the industrial imperatives of our project, how do we, as researchers and a delivery team establish not only ethical but critical boundaries and spaces for the project?

3 CONCLUDING REMARKS

This paper has sought to briefly showcase the challenges that can arise when balancing applied HCI research, ensuring meaningful participation with multiple project partners across a sector, and working to deliver commercial innovation together with societal impact. In our case, these challenges include fostering the creative sector's digital literacy skills, enabling project partners to define and co-produce novel, data-driven R&D, all the while keeping an eye on inclusivity and the ethical boundaries of DDI.

Especially in context of emerging funding body initiatives like the UK Knowledge Excellence Framework, this intermingling of research and broader impact objectives is becoming increasingly common, and is thus not unique to our project. Therefore, we expect that the underlying threads of the challenges we have described may already be familiar to many researchers within HCI. However, although they are central to determining how research agendas and approaches are shaped in these types of projects, the way in which these challenges are addressed and negotiated may not always be explicitly reflected on in research outputs.

The many frameworks for configuring participation and person-centred engagement that have emerged from the 2nd and 3rd wave [3] have positioned HCI well as a discipline that continuously adapts to and reflects on the values of people. This is frequently showcased through participatory design [4, 20] and action research (e.g., [1]) approaches. Moreover, a growing community of HCI researchers is now investigating how to explicitly reflect on the social, environmental and economic impact of applied research - for example by appropriating Responsible Innovation frameworks into their research [2, 12], and by adding new value-centred dimensions to existing evaluation frameworks [17].

However, what is still nascent, is work on widening these emerging frameworks to reflect on: 1) how research can best be shaped in light of a sector's needs more broadly, that is, beyond a specific organization or community while at the same time; 2) how research (and researchers) can hold their own amidst competing real-world priorities. In our case, for example, this involves understanding how to set and evaluate goals for the envisioned social and cultural value of the project, in addition to a purely economic value. It also means understanding the opportunities and challenges in different types of relations we might form with participants, stakeholders, and ultimately collaborators in our research. As researchers only beginning to explore these issues, we aim this paper to serve as an opening provocation and invitation for discussion from others charting these new terrains.

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REFERENCES

[1] Mara Balestrini, Yvonne Rogers, Carolyn Hassan, Javi Creus, Martha King, and Paul Marshall. 2017. A city in common: a framework to orchestrate large-scale citizen engagement around urban issues. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 2282–2294.

[2] Oliver Bates, Kathy New, Samantha Mitchell-Finnigan, Matthew Louis Mauriello, Christian Remy, Roy Bendor, Samuel Mann, Simran Chopra, Adrian K. Clear, and Chris Preist. 2019. Towards a Responsible Innovation Agenda for HCI. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, W24.

[3] Susanne Bødker. 2006. When second wave HCI meets third wave challenges. In *Proceedings of the 4th Nordic conference on Human-computer interaction: changing roles*. ACM, 1–8.

[4] Susanne Bødker and Morten Kyng. 2018. Participatory design that matters—Facing the big issues. *ACM Transactions on Computer-Human Interaction (TOCHI)* 25, 1 (2018), 4.

[5] Andy Crabtree, Alan Chamberlain, Rebecca E. Grinter, Matt Jones, Tom Rodden, and Yvonne Rogers. 2013. Introduction to the Special Issue of" The Turn to The Wild". *ACM Trans. Comput.-Hum. Interact.* 20, 3 (2013), 13–1.

[6] Department for Business, Energy and Industrial Strategy. 2016. *Science and innovation audits: wave 1 summary reports.* Technical Report. GOV.UK. https://www.gov.uk/government/publications/science-and-innovation-audits-first-wave-reports

[7] Department for Digital Media, Culture and Sport. 2001. *Creative Industries Mapping Documents.* Technical Report. GOV.UK. https://www.gov.uk/government/publications/creative-industries-mapping-documents-2001

[8] Department for Digital Media, Culture and Sport. 2015. *Creative Industries Economic Estimates.* Technical Report. GOV.UK. https://www.gov.uk/government/statistics/creative-industries-economic-estimates-january-2015

[9] Virginia Eubanks. 2018. *Automating inequality: How high-tech tools profile, police, and punish the poor.* St. Martin's Press.

[10] Sarah Fox, Mariam Asad, Katherine Lo, Jill P. Dimond, Lynn S. Dombrowski, and Shaowen Bardzell. 2016. Exploring social justice, design, and HCI. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems.* ACM, 3293–3300.

[11] Sarah E. Fox, Kiley Sobel, and Daniela K. Rosner. 2019. Managerial Visions: Stories of Upgrading and Maintaining the Public Restroom with IoT. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems.* ACM, 493.

[12] Barbara Grimpe, Mark Hartswood, and Marina Jirotka. 2014. Towards a closer dialogue between policy and practice: responsible design in HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* ACM, 2965–2974.

[13] Andrew Iliadis and Federica Russo. 2016. Critical data studies: An introduction. *Big Data & Society* 3, 2 (2016), 2053951716674238.

[14] Richard Mortier, Jianxin Zhao, Jon Crowcroft, Liang Wang, Qi Li, Hamed Haddadi, Yousef Amar, Andy Crabtree, James Colley, and Tom Lodge. 2016. Personal data management with the databox: What's inside the box?. In *Proceedings of the 2016 ACM Workshop on Cloud-Assisted Networking.* ACM, 49–54.

[15] OECD. 2013. Exploring Data-Driven Innovation as a New Source of Growth: Mapping the Policy Issues Raised by "Big Data". https://www.oecd-ilibrary.org/science-and-technology/exploring-data-driven-innovation-as-a-new-source-of-growth_5k47zw3fcp43-en

[16] Kathleen H. Pine and Max Liboiron. 2015. The politics of measurement and action. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems.* ACM, 3147–3156.

[17] Christian Remy, Oliver Bates, Alan Dix, Vanessa Thomas, Mike Hazas, Adrian Friday, and Elaine M. Huang. 2018. Evaluation beyond usability: Validating sustainable HCI research. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems.* ACM, 216.

[18] Lucy A. Suchman. 1987. *Plans and situated actions: The problem of human-machine communication.* Cambridge university press.

[19] Alex S. Taylor, Siân Lindley, Tim Regan, David Sweeney, Vasillis Vlachokyriakos, Lillie Grainger, and Jessica Lingel. 2015. Data-in-place: Thinking through the relations between data and community. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems.* ACM, 2863–2872.

[20] John Vines, Rachel Clarke, Peter Wright, John McCarthy, and Patrick Olivier. 2013. Configuring participation: on how we involve people in design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* ACM, 429–438.

[21] Shoshana Zuboff. 2015. Big other: surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology* 30, 1 (2015), 75–89.